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10/578,532

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Jian Zhao

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EXAMINER

KARPINSKI, LUKE E

ART UNIT

PAPER NUMBER

1616

MAIL DATE

DELIVERY MODE

07/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,532	Applicant(s) ZHAO ET AL.	
	Examiner LUKE E. KARPINSKI	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 20-29 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/22/2009 has been entered.

Claims

Claims 1-5 and 20-29 are currently pending.

Claims 1-5 are withdrawn.

Claims 6-19 are canceled.

Claims 20-29 are new and under consideration in this action.

Rejections

Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

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New Rejections

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Applicant Claims
2. Determining the scope and contents of the prior art.
3. Ascertaining the differences between the prior art and the claims at issue, and resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 20, 21, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Patent publication CN 20011286915 to Zhu et al.

Applicant Claims

Applicant claims a method for preparing an antibacterial agent containing high-valence silver comprising the steps of: adding a solid carrier to a solution containing high-valence silver, stirring said solution to yield a solid compound, and filtering and drying said solid compound, wherein the volume to volume ratio of said solid carrier and said solution is 1:6 to 1:10 and that said high-valence silver solution is produced by dissolving silver peroxide into persulphate or nitric acid.

Applicant further claims several solid carriers and a calcinating step with ranges for the time temperature and particle size recovered.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

Zhu et al. teach methods of preparing an antimicrobial agent comprising trivalent silver comprising, adding a silver carrier capable of ion exchange to a high valence silver solution, stirring to a slurry and filtering and drying said formulation (page 6, step 2) as pertaining to claim 20..

Zhu et al. further teach potassium titanium phosphates (page 5, embodiment 1) as pertaining to claim 21, heating said antimicrobial agent to 400-1100 degrees for 2-8 hours (page 6, step 4), which reads on the instant calcinating step, and reducing the

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size of said particles to 0.5 microns (page 7), which reads on grinding with a gas flow pulverizer to 1-10 microns.

***Ascertainment of the Difference between Scope the Prior Art and the Claims
(MPEP §2141.012)***

Zhu et al. do not teach the utilization of a gas flow pulverizer or a sizes range of 1-10 microns as claimed in claim 27. However, Zhu et al. do teach that said compositions are reduced to particle of 0.5 microns with the utilization of an air vibrating screen.

Zhu et al. also do not teach a carrier to solution ratio of 1:6-1:10. However Zhu et al. do teach that said carrier is added to said solution and stirred until a slurry is formed.

Zhu et al. also do not teach adding silver peroxide to a persulphate solution. However, Zhu et al. do teach a reaction which produces silver peroxide in situ.

***Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)***

Regarding claim 27, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to reduce the formulations of Zhu et al. to 1-10 microns with a gas flow pulverizer.

One of ordinary skill in the art would have been motivated to do this because Zhu et al. teach a size reduction to 0.5 microns so one of ordinary skill in the art would have

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been more than capable of only reducing the size to 1-10 microns and Zhu et al. clearly teach reducing the size of said particle through collisions making it obvious to utilize any size reduction by collision method including a gas flow pulverizer. Therefore it would have been obvious to utilize the gas flow pulverizer of Zhu et al. and only reduce said particles to 1-10 microns in order to utilize another known size reduction method.

Regarding the carrier to solution ratio, the instant claims recite that a pulp is formed. The examiner equates a pulp and a slurry and since the same carriers are added to the same solutions it is deemed that the ratio of components of Zhu et al. would necessarily be within the claimed range. Further, the methods of Zhu et al. produce the same formulation and it is incumbent upon applicant to show the criticality of the claimed range.

Regarding the exact addition of chemical components to produce said high valence silver solution, although Zhu et al. does not create said solution through the exact steps of adding silver peroxide to a persulphate or concentrated nitric acid solution, Zhu et al. do teach that a persulphate salt and KOH solution is utilized to dissolve the carrier compound comprising a Ag salt. When silver salt is introduced into a persulphate solution it yields silver peroxide, which reacts with the original persulphate to yield the products described in instant claim 20. Although Zhu et al. do not teach the specific addition of silver peroxide, the steps of Zhu et al. read on said addition because in the solutions of Zhu et al. said silver peroxide is formed in situ and the same reaction as instantly claimed takes place resulting in the same final products.

From the teachings of the reference, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

2. Claims 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Patent publication CN 20011286915 to Zhu et al. as applied to claim 20 above in further view of US Patent 5,405,644 to Ohsumi et al. and US Patent 4,938,958 to Niira (deceased) et al.

Applicant Claims

Applicant claims are delineated above and incorporated herein. Applicant further claims reaction parameters of specific pH, time and temperature ranges, the utilization of specific solutions of adjust said pH, washing said cakes until a neutral pH is reached, and drying said cakes at a predetermined temperature for a predetermined time.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

The teachings of Zhu et al. are delineated above and incorporated herein. Zhu et al. also teach said reactions occurring at 60 degrees and from 20-80 degrees, for 4-10 hours (page 6, steps 2 and 4) as pertaining to claim 22, drying said formulations (page 6, steps 2 and 4), as pertaining to claims 24-26, and calcinating said formulations at

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400-1100 degrees for 2-8 hours (page 6, step 4) and reducing said particle size to 0.5 microns through collisions (page 7), as pertaining to claims 27-29

***Ascertainment of the Difference between Scope the Prior Art and the Claims
(MPEP §2141.012)***

Zhu et al. do not teach a reaction parameter of pH 1-5 as claimed in claims 22 and 23. This deficiency in Zhu et al. is cured by Ohsumi et al. Ohsumi et al. teach producing antimicrobial compositions comprising silver ions and phosphate carriers and adjusting the pH of said reaction solution to 2 with NaOH (col. 8, example 1).

Further, Zhu et al. do not teach washing said cakes to a neutral pH as claimed in claims 24-26. This deficiency is cured by Niira et al. Niira et al. teach producing antibiotic compositions by ion exchanging silver ions with zeolites and that after said cakes are formed that said product is washed until almost no ions remain, which reads on a neutral pH (col. 5, lines 50-60).

Finding of Prima Facie Obviousness Rational and Motivation

(MPEP §2142-2143)

Regarding claim 22, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to ensure the reaction of Zhu et al. was carried out at a pH of 1-5 as taught by Ohsumi et al. in order to produce the invention of instant claim 22.

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One of ordinary skill in the art would have been motivated to do this because Zhu et al. teach that KOH is utilized to alter the pH and Ohsumi et al. teach similar reactions for attaining similar products and that an acidic pH is utilized for said ion exchange reactions. Therefore it would have been obvious to utilize the pH range of Ohsumi et al., with the ion exchange reactions of Zhu et al. in order to perform a similar reaction at a known pH.

Regarding claims 24-26, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to rinse the products of Zhu et al. to a neutral pH as taught by Niira et al. in order to produce the invention of instant claims 24-26.

One of ordinary skill in the art would have been motivated to do this because Zhu et al. teach that said products are washed and Niira et al. teach that similar products are washed until almost all ions are removed. Therefore it would have been obvious to rinse away all ions to a neutral pH as described by Niira et al. for the products of Zhu et al.

From the teachings of the reference, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

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3. Claims 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,441,717 to Ohsumi et al. in view of International Patent publication CN 20011286915 to Zhu et al.

Applicant Claims

Applicant claims are delineated above

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

Ohsumi et al. teach a method of preparing inorganic antibacterial compounds containing silver (abstract), adding a solid carrier, capable of ion exchange, to a solution containing silver, stirring said solution to form a solid, and filtering and drying said solid (col. 5, line 49 to col. 6, line 17), as claimed in claim 14.

Ohsumi et al. further teach dissolving a silver salt into nitric acid to prepare the silver solution (col. 7, lines 31-35) as pertaining to claim 15, sodium zirconium phosphate and zeolite as the solid carrier (col. 11, example 4, and col. 1, lines 50-53 respectively), as claimed in claim 16, washing and drying the solid product at 110 degrees (col. 5, line 49 to col. 6, line 17), as pertaining to claim 18, and firing said compound from 700-900 degrees (col. 6, line 53 to col. 7, line 5) and said product having a size range from 1-2 microns (col. 12, comparative example 3) as pertaining to claim 19.

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***Ascertainment of the Difference between Scope the Prior Art and the Claims
(MPEP §2141.012)***

Ohsumi et al. do not teach high valence silver as claimed in claim 20. This deficiency in Ohsumi et al. is cured by Zhu et al. Zhu et al. teach that similar compositions comprising high valence silver including trivalent silver and that high-valent silver ions are 50-200 times more capable than mono-valent silver (page 5 top).

Further, Ohsumi et al. do not teach any production methods of high-valent silver solutions. This deficiency is cured by Zhu et al. Zhu et al. teach that producing high-valent silver solutions (page 6, steps 2 and 4).

***Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)***

Regarding claim 20, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the antibacterial silver compounds of Ohsumi et al., with high-valent silver, as taught by Zhu et al. in order to practice the invention of instant claim 20.

One of ordinary skill in the art would have been motivated to do this because Zhu et al. teach that high-valent silver is a better antibacterial agent than monovalent silver. Therefore it would have been obvious to utilize the high-valent silver of Zhu et al., with the antibacterial production methods of Ohsumi et al. in order to produce a more active antibacterial product.

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Further regarding claim 20, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to utilize the claimed solid carrier to silver solution ratio in order to practice the method of claim 20.

One of ordinary skill in the art would have been motivated to utilize said ratio because the ratio is simply an amount of solid to add to a liquid, with no concentration requirements. The only requirement is that the solution is capable of being stirred after the addition. One of ordinary skill in the art would have known to add enough solid carrier to react with the amount of silver in the silver solution and to have the silver solution at a concentration dilute enough, that is comprising enough liquid, so that the addition of the solid carrier still rendered the solution capable of being stirred and fluid enough as to not hinder the ion exchange process. Further, Ohsumi et al. teach that said solutions are mixed as a slurry, which reads on a pulp. Therefore it would have been obvious to utilize the claimed ratio in order to promote ion exchange.

Regarding claim 20, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the antibacterial silver compounds of Ohsumi et al., by dissolving silver peroxide in an acid in order to practice the invention of instant claim 20.

One of ordinary skill in the art would have been motivated to do this even though Zhu et al. does not create said solution through the exact steps of adding silver peroxide to a persulphate or concentrated nitric acid solution, Zhu et al. do teach that a persulphate salt and KOH solution is utilized to dissolve the carrier compound comprising a Ag salt. When silver salt is introduced into a persulphate solution it yields

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silver peroxide, which reacts with the original persulphate to yield the products described in instant claim 20. Although Zhu et al. do not teach the specific addition of silver peroxide, the steps of Zhu et al. read on said addition because in the solutions of Zhu et al. said silver peroxide is formed in situ and the same reaction as instantly claimed takes place resulting in the same final products.

Regarding claims 24-26, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to wash the product material until a pH of 5-6 was reached and to dry said product material for 1-2 hours.

One of ordinary skill in the art would have been motivated to wash the product material until a pH of 5-6 was reached because Ohsumi et al. teach that the product is sufficiently washed. Since the product material of Ohsumi et al. and the filter cake of the instant invention are the same the materials would necessarily have the same pH after filtering and washing said materials. The office does not have the facilities to test that both materials would have the same pH and it is therefore incumbent upon the applicant to show that the materials do have a different pH. Therefore it would have been obvious to wash the filter material till a pH of 5-6 is reached.

One of ordinary skill in the art would have been motivated to dry the product material for 1-2 hours because Ohsumi et al. teach that the product material is dried for 12 hours at 110 degrees. The term "dried" is read as essentially all liquid being removed. One of ordinary skill in the art would have understood what the term dry means and be able to determine the appropriate amount of time to expose said product

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material to a temperature of 110 degrees in order to dry said product. Therefore it would have been obvious to dry the product material for 1-2 hours.

Regarding claims 27-29, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to grinding said product to a particle size of 1-2 microns.

One of ordinary skill in the art would have been motivated to grind the product to said size because Ohsumi et al. teach that the products can be in powder form and also teach a specific particle size between 1 and 2 microns for the zeolite example.

Therefore it would have been obvious to grind any of the product examples down to a size of 1-2 microns in order to produce a powder with acceptable particle sizes.

From the teachings of the reference, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Response to Arguments

Applicant's arguments with respect to claims 14-19 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

Claims 1-5 are withdrawn.

Claims 6-19 are canceled.

Claims 20-29 are rejected.

No claims are allowed.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUKE E. KARPINSKI whose telephone number is (571)270-3501. The examiner can normally be reached on monday-friday 9-5 est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEK

/Mina Haghighatian/
Primary Examiner, Art Unit 1616